

Performance modeling of Arabian asphalt using HP-GPC

Asi I.M., Al-Abdul Wahhab H.I., Al-Dubabi I.A., Ali M.F.

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Abstract: In this study, Arabian neat asphalt samples were collected from different asphalt producing refineries in the Gulf countries. Another set of polymer modified samples was also included in this study. In the polymer modification process, 5, 10, and 15% crumb rubber (CRT) and 3, 6, and 9% styrene-butadiene-styrene (SBS) were used. All asphalt samples were subjected to two aging processes to simulate heating, mixing, compaction, and in-service aging. The asphalt samples at the different aging stages were subjected to performance-based tests that were adapted and/or modified by the Strategic Highway Research Program (SHRP) team. High pressure gel permeation chromatography (HP-GPC) was used to chemically analyze the test samples by generating profiles of their molecular size distribution. Models were built to predict the performance-based properties from the produced HP-GPC profiles.